



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,165	09/26/2003	Michael E. Johnson	5833-A-15	8108
33717	7590	01/25/2005	EXAMINER	
GREENBERG TRAURIG LLP 2450 COLORADO AVENUE, SUITE 400E SANTA MONICA, CA 90404			LE, THAO P	
			ART UNIT	PAPER NUMBER
			2818	

DATE MAILED: 01/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/672,165

Applicant(s)

JOHNSON ET AL.

Examiner

Thao P. Le

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) ✓
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1 page.
- 4) ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restriction

Examiner confirms that Applicants elected by phone to prosecute Claims 1-14 and have withdrawn Claims 15-20 without prejudice.

Information Disclosure Statement

Information Disclosure Statement (IDS) filed on **09/26/03** and made of record. The references cited on the PTOL 1449 form have been considered.

Specification

The specification is objected to for the following reason:

The related application serial Number is mixing. Applicant is required to submit the serial No. of related application entitled "Forming Partial Depth Structures In Polymer Film" that applicant has claimed.

Claim Rejections

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 are rejected under 35 USC 102 (b) as being anticipated by Buynoski, U.S. Patent No. 4,761,386.

Regarding claims 1-2, Buynoski discloses an IC comprising:

- a) at least one solder ball pad 14
- b) a moat 24 surrounding each solder ball pad (lines 62-63, col. 3)

(See Figs. 1-2, Cols. 1-6, and Abstract) (claim 1)

and the moat is formed in the at least one passivation layer 20, 21 (lines 40-44, Col. 3) (claim 2).

Boutaghou et al., (U.S. Patent No. 6,296,552), Sugizaki, (U.S. Patent No. 6,437,434), and Peters et al., (U.S. Patent No. 6,465,811) also disclose the IC as claimed in claims 1-2, comprising a moat surrounding solder ball pad.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buynoski, U.S. Patent No. 4,761,386.

Regarding claims 3-13, Buynoski discloses the IC in claims 1-2 above, and also discloses the passivation layers are either a single layer of vapox or the vapox and a layer of silicon nitride overcoated the vapox layer but fails to disclose the passivation layers made of photo-imageable polymer film. However, using photo-imageable polymer is well known in the art (See Specification of present application). Using passivation materials as described in Buynoski or photo-imageable polymer film would yield equivalent results. Buynoski also discloses the passivation has a thickness and the moat has a thickness. Still regarding to claim 13, applicant admitted prior art in specification that it is well known in the art to have a polymer collar around the solder ball (U.S. Patent No. 6,578,755).

Regarding claim 14, Buynoski discloses the moat is used to isolate the pad from remainder of conductive surface layer and eliminate any liquid that formed between the each solder ball but fails to disclose the moat is used to prevent flow of liquefied polymer collar from within the moat to without the moat during heating of the wafer. It would have been obvious to one having ordinary skill in the art at the time the invention was made that the moat formed in Buynoski would carry out the same function as the moat in present invention because the moat in Buynoski is used to isolate the solder ball pad from other materials formed from outside the solder ball pad.

If Applicants are aware of better art than that which has been cited, they are required to call such to attention of the examiner.

When responding to the office action, Applicants' are advice to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao P. Le whose telephone number is 571-272-1785. The examiner can normally be reached on M-T (7-6).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Thao P. Le', with a stylized, cursive script.

Thao P. Le
Examiner
Art Unit 2818